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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/817,217 | 04/02/2004 | Dane P. Kottke | A2003009(2) | 2410 |

26643 7590 02/19/2008
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| EXAMINER | |
|---|---|
| ROBERTS, JESSICA M | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2621 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 02/19/2008 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/817,217 | KOTTKE ET AL. | |
| | Examiner | Art Unit | |
| | Jessica Roberts | 2621 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *21 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) 7 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 7 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/21/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Specification*

The specification is objected to because of the following informalities:

$A_B$ should be spelled out to represent $A_{max}$ [0010]

"no" should be removed from the sentence, "Non-zero amplitude coefficients in the base range, with *no* preceding run of zero valued coefficients [0047].

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 7 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Regarding claim 7, applicant has claimed a nonzero value and a zero value. Applicant has no support for this claim limitation in the specification or disclosure. The examiner treats the nonzero value as a nonzero amplitude coefficient and the zero value as a run of zero valued coefficients.

***Allowable Subject Matter***

3. The indicated allowability of claim 7 is withdrawn in view of the newly discovered reference(s) to Miyasaska et al., US-6, 484,142 and Chen et al., US-7, 212,681. Rejections based on the newly cited reference(s) follow.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sharp lab of America et al., WO 98/35500 in view of Miyasaka et al., US-6, 484,142 and further in view of Chen et al., US-7, 212,681.

7. Regarding **claim 7**, Sharp teaches method for fixed bit rate, intraframe compression of video (intracoded or of class intra; page 6 line 24-29), including a sequence of images (frames 1 to N; fig. 1), comprising, for each image: transforming portions of the image to generate frequency domain coefficients for each portion (fig. 2

14 & 16); selecting a quantization matrix according to the desired bit rate (Sharp, page 1 line 29-31. Further disclosed by Sharp is where wj is the jth value of a quantization matrix chosen by the designer of the MPEG codec, page 6 line 9-13.); determining a bit rate for each transformed portion using a plurality of scale factors (Sharp; See Optimization, page 9 lines 19-23 and equations 6 &7. Further, Sharp discloses the weight, variance and bits are used in determining the quantization values; see page Frame-Based Quantizater Control page 14. The examiner notes that the weight, variance and number of bits are all scale factors.); estimating distortion for each portion according to the plurality of scale factors (Sharp, page 8 equation 5); selecting a scale factor for each portion to minimize the total distortion in the image to achieve a desired bit rate (Sharp, See Optimization, page 9 line 19-23 and equations 6&7); quantizing the frequency domain coefficients for each portion using the selected quantization matrix as scaled by the selected scale factor for the portion(page 6 line 4-12 and fig. 2. Further, Sharp discloses the quantization scale and the jth coefficient of a block in quantized using a quantizer step size Qiwj and the quantization matrix is chosen by the designer of the MPEG codec, page 6 line 4-12); entropy encoding the quantized frequency domain coefficients using a variable length encoding to provide compressed data for each of the defined portions (fig. 2. Sharp discloses coding the DCT coefficients. Although Sharp is silent in regards to the type of coding, it is inherent that entropy encoding is used with video compression in the form of Huffman, Adaptive Huffman, Run length, or variable length encoding); and outputting the compressed data for each of the defined portions to provide a compressed bitstream at the desired bit rate (fig. 2).

Sharp is silent in regards to wherein entropy encoding comprises: for each nonzero value not preceded by a zero value, determining whether the nonzero value is in a base range or an index range; for each nonzero value not preceded by a zero value and in the base range, encoding the nonzero value using a code word from a first set of code words; for each nonzero value not preceded by a zero value and in the index range, determining an index and encoding the nonzero value using a code word from a second set of code words, followed by the index; for each nonzero value preceded by a zero value, determining whether the nonzero value is in a base range or an index range; for each nonzero value preceded by a zero value and in the base range, encoding the nonzero value using a code word from a third set of code words and encoding the zero value using a code word from a fifth set of code words and after the code word for the nonzero value; and for each nonzero value preceded by a zero value and in the index range, determining an index and encoding the nonzero value using a code word from a fourth set of code words, followed by the index and encoding the zero value using a code word from the fifth set of code words and after the code word for the nonzero value.

However, Miyasaka teaches the non-zero values are in a plurality of ranges (column 1 line 33-45, and figs. 14-19). Further, Miyasaka teaches calculating two index values "index**0**" and "index**1**" (column 2 line 29-34, column 14 line 10-29, and figs. 14-19). Miyasaka teaches a Huffman codebook selection section for selecting one of a number of H of Huffman codebooks (H is an integer equal to or greater than 1) for each of the groups of data stored in the respective storage sections, each of the Huffman

codebooks having a codebook number: a number G of Huffman encoding sections, each of the Huffman encoding sections Huffman-encoding a corresponding one of the G groups of data by using one of the Huffman codebooks which is selected by the Huffman codebook selection section for the one group of data; and a codebook number encoding section for encoding the codebook number of each Huffman codebook selected by the Huffman codebook selection section. The Huffman codebook selection section includes a code length calculation section for calculating a code length which would result from a Huffman encoding operation of each of the G groups of data using each Huffman codebook, and a control section for selecting one of the Huffman codebooks which is suitable for the group of data based on the code length calculated by the code length calculation section (column 4 line 34-60 and fig. 1). Miyasaka discloses calculating two index values (index0 and index1), using a plurality of Huffman codebooks with a selector that selects one of the "H" Huffman codebooks which is suitable for each scale factor band (column 11 line 25-31), therefore it is clear to the examiner that the calculation of two index values (index0 and index1), representing the base range and index range in combination with the previously discussed limitations met by Miyasaka, provides support for the claimed limitations.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the method and apparatus of Sharp with the teachings of Miyasaka to provide a method that can select the optimal Huffman codebook so as to minimize the total code amount of all encoded SFBs while taking into consideration the

code amount needed to encode the codebook number of each selected Huffman codebook (column 4 line 26-32).

The combination of Sharp and Miyasaka as a whole are silent in regards to each nonzero value not preceded by a zero value; and if each nonzero value proceeded by a zero value.

However, Chen teaches in 2D-VLC, the events for which codewords are include both the quantized coefficient amplitude and the run-lengths of the most likely-to-occur coefficients-- e.g., zero amplitude coefficients--that precedes any less than most likely-to-occur-coefficient-- e.g., a non-zero amplitude coefficient when the coefficients are ordered along a specified two dimensional path, e.g., along a zig-zag path for an 8 X8 coefficient block to form a series of coefficients. It is assumed that 0 amplitude is the most likely-to-occur, e.g., the most frequently encountered amplitude, and that 1 is the next most likely-to-occur—next most common—amplitude. The method however, can work for other orders of likelihood, so that the most likely amplitude— the first amplitude—need not be 0, and the nest most likely amplitude--the second amplitude—need not be 1 (column 4 line 1-21). The occurrence information of the quantities being tracked may be tabulated in a two-dimensional table as shown in Table 1 below, where S.sub.ij, i, j=1, 2, . . . is the number of coefficients that both have amplitude i and are preceded by j consecutive zero amplitude coefficients (column 4 line 21-26 and table 1). Chen discloses an event is a run of none or more zero-valued coefficients followed by a run of one or more non-zero amplitude coefficients. In a variation, the events include runs of none or more zero-valued coefficients followed by a subset of all possible

runlengths of non-zero-amplitude coefficients (abstract), as well as the method however, can work for other orders of likelihood, so that the most likely amplitude— the first amplitude—need not be 0, and the nest most likely amplitude--the second amplitude—need not be 1 (column 4 line 1-21), and an event is a run of none or more zero-valued coefficients followed by a run of one or more non-zero amplitude coefficients, it is clear to the examiner that Chen teaches the amplitude coefficient is capable of being preceded by a run of zero value coefficients, which reads on the claimed limitations.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Sharp and Miyakasak with the method of Chen for providing an efficient VLC scheme that can be used as a replacement of known 2D-VLC. There further is a need for an efficient VLC scheme that can provide better compression performance than known 2D-VLC techniques (column 2 line 26-30).

***Conclusion***

***Examiner's Note***

8. The referenced citations made in the rejection(s) above are intended to exemplify areas in the prior art document(s) in which the examiner believed are the most relevant to the claimed subject matter. However, it is incumbent upon the applicant to analyze the prior art document(s) in its/their entirety since other areas of the document(s) may be relied upon at a later time to substantiate examiner's rationale of record. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore &

associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). However, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed...." In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Bj¢ntegaard et al., US-5, 579,413 Picture data encoding Method.

***Contact***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica Roberts whose telephone number is (571) 270-1821. The examiner can normally be reached on 7:30-5:00 EST Monday-Friday, Alt Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JMR/

Marsha D Banks-Harold

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